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(54) Simulated solid fuel gas fires.

(57) A burner for a simulated solid fuel effect gas fire has a rigid firebed member (16) supporting imitation solid fuel elements, the firebed member floating on resilient support means (17) such that the member is free to expand and contract in both vertical and horizontal directions.

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Simulated solid fuel gas fires are already known in which imitation coal or logs are placed on a firebed in a burner tray. Gas is then passed upwardly through the firebed for combustion in the region occupied by the coal or logs.

For fires burning neat gas, the firebed advantageously consists of a flexible ceramic fibre blanket, as disclosed and claimed in our GB patent 2,193,802B. In this case, the gas diffuses through the blanket.

Burners are also known in which pre-aerated gas is supplied to the combustion region of the fire through exit ports formed in a rigid refractory material. In this case, a reservoir chamber is generally provided beneath the firebed so that gas supplied from a nozzle is dispensed over the area of the firebed. Such burners are disclosed, for example, in GB Patent 2,156,507 and EP-A-0311462.

A problem which arises when using a rigid refractory material rather than a flexible blanket is that the rigid material expands and contracts as the burner is heated and cooled. We have discovered that if the material is secured to a metal burner dish or tray, as in EP-A-0311462, or comprises a hollow moulded structure, as in GB 2156507, the resulting stresses can lead to cracking of the refractory material and a short burner life. The large temperature difference between the upper surface of the refractory material supporting the fuel elements, and the underneath surface which forms part of the reservoir chamber, can also produce warping of the refractory material and cause additional stresses with possible leakage of gas.

According to the present invention, these problems are alleviated by providing a burner in which a rigid firebed member for supporting the simulated fuel elements floats on resilient support means such that the firebed member is free to expand and contract in both horizontal and vertical directions. It is not rigidly held or fixed in position.

In a preferred embodiment, the firebed comprises at least one board or board-like member and the edges of the board are spaced inwardly from respective upstanding side walls of a burner tray, the underside of the board being spaced above the base of the tray to form a gas reservoir chamber. This chamber has an inlet for receiving pre-aerated gas, and the board has at least one aperture through which the gas is supplied to the combustion region of the fire. The board is preferably supported in the tray on an endless elongate strip of resilient insulating material, such as ceramic fibre blanket, which may also form the side walls of the reservoir chamber, the strip preferably extending outwardly beyond the edges of the board to bridge the gap between the edges of the board and the side walls of the tray.

By way of example only, an embodiment of the invention will now be described with reference to the accompanying drawings in which:

Fig. 1 is a schematic plan view of a burner embodying the invention; and

Fig. 2 is a schematic cross-section taken on the line A-A in Fig. 1.

Referring to these drawings, a trapezoidal metal burner tray 10 has a front wall 11, a rear wall 12, opposed side walls 13, 14 and a base 15.

The tray 10 is supported on legs 22, and neat gas is fed through a pipe 39 to a nozzle 20 supported beneath the base 15 of the tray by a bracket 21, the nozzle 20 being aligned with an inlet opening 23 in the base 15. The gas emerging from the nozzle 20 creates a venturi effect which draws in air through the opening 23.

A ceramic fibre board 16 (omitted from Fig. 1) having the same trapezoidal shape is nested within the tray 10. The perimeter of the board 16 is seated on a resilient strip 17 of ceramic fibre blanket, the strip 17 resting on the base 15 of the tray and having its outer peripheral wall 40 retained against the respective front, back and side walls 11, 12, 13 and 14 of the tray by metal corner pieces 18 and a metal retaining fence 19 welded to the base 15.

The thickness and resilience of the blanket strip 17 ensures that the board 16 is spaced above the base 15 of the tray to form a chamber 24 for receiving the gas/air mixture through the inlet opening 23. The outer peripheral wall 41 of the board is spaced inwardly from the walls 11, 12, 13 and 14 of the tray so that the board is effectively floating on the resilient blanket strip 17. This accommodates expansion and contraction of the board in all directions as the fire heats up and cools down.

Moreover, the strip 17 extends outwardly beyond the edges of the board 16 so that the strip blocks the gap 28 between the edges of the board and the respective walls 11, 12, 13 and 14 of the tray. Accordingly, while a small proportion of the aerated gas in the chamber 24 may diffuse through the blanket 17 and pass upwardly through the gap 28, the major portion of the gas will emerge from the chamber 24 through parallel slots 25 cut in the board 16 and forming exit ports. As illustrated, the board 16 has four such slots, the position of these slots 25 being shown in dotted outline in Fig. 1.

The gas emerges from the slots 25 into the combustion region of the fire containing the imitation coal or logs 26. In practice, the pre-aerated gas is then drawn toward the rear of the fire by the chimney draught.

The weight of the board 16 compresses the resilient blanket material 17 so that a continuous seal is formed around the edge of the board, even though the underneath surface of the board may not be perfectly flat. In particular, should the board warp over a period of use due to stresses brought about by the high temperature difference between the top and bottom surfaces of the board, the resilience of the blanket mate-

rial is such that it will recover and remain in contact with the underneath surface of the board wherever the board curves away from the sealing strip 17. This is shown, for example, on the left of Fig. 2.

An advantage of the illustrated fire is that the tray 10 and the refractory board 16 can be made in various shapes and sizes without adding significantly to the manufacturing costs. Moreover, the number and positioning of the slots 25 can be varied as required. The fire is therefore suitable for manufacturers wishing to offer their customers made-to-measure coal effect gas fires burning pre-aerated gas.

The rigid board 16 may comprise ceramic fibres with organic and mineral binders, a particularly suitable board being that sold by SEPR Ceramics Ltd under the designation "Keranap 60".

The temperature within the chamber 24 is likely to be in the region of 300°C so that the ceramic blanket material 17 might alternatively comprise rockwool, glassfibre or any other flexible insulating material capable of withstanding such temperatures.

Claims

1. A burner for a simulated solid fuel effect gas fire, the burner comprising a rigid firebed member (16) for supporting the imitation solid fuel elements (26), characterised in that the firebed member (16) is floating on resilient support means (17) such that the member (16) is free to expand and contract in both horizontal and vertical directions.

2. A burner according to claim 1 in which the resilient support means (17) comprises a strip of resilient insulating material.

3. A burner according to claim 2 in which the strip (17) is an endless strip.

4. A burner according to claim 2 or claim 3 in which the insulating material comprises ceramic fibre blanket material.

5. A burner according to any one of the claims 2-4 in which the resilient strip (17) is disposed in a burner tray (10) having a base (15) and upstanding side walls (11, 12, 13, 14).

6. A burner according to claim 5 in which the resilient strip (17) forms the side walls of a gas reservoir chamber (20) formed between the underside of the firebed member (16) and the base (15) of the tray (10).

7. A burner according to claim 5 or claim 6 in which the firebed member (16) is bounded by an outer peripheral wall spaced inwardly from the side walls (11, 12, 13, 14) of the tray (10).

8. A burner according to claim 6 or claim 7 in which the reservoir chamber (24) has at least one inlet (23) for receiving pre-aerated gas, and the firebed member (16) has at least one aperture (25) through which the gas is supplied to the combustion region of the fire.

9. A burner according to any one of the claims 5-8 in which the strip (17) is bounded by an outer peripheral wall abutting the upstanding side walls (11, 12, 13, 14) of the tray (10) and bridging the gap (28) between the upstanding side walls (11, 12, 13, 14) and the outer peripheral wall of the firebed member (16).

10. A burner according to any one of the preceding claims wherein the firebed member (16) comprises a board or board-like member.

11. A simulated solid fuel effect gas fire comprising a burner according to any one of the preceding claims supporting imitation solid fuel elements.

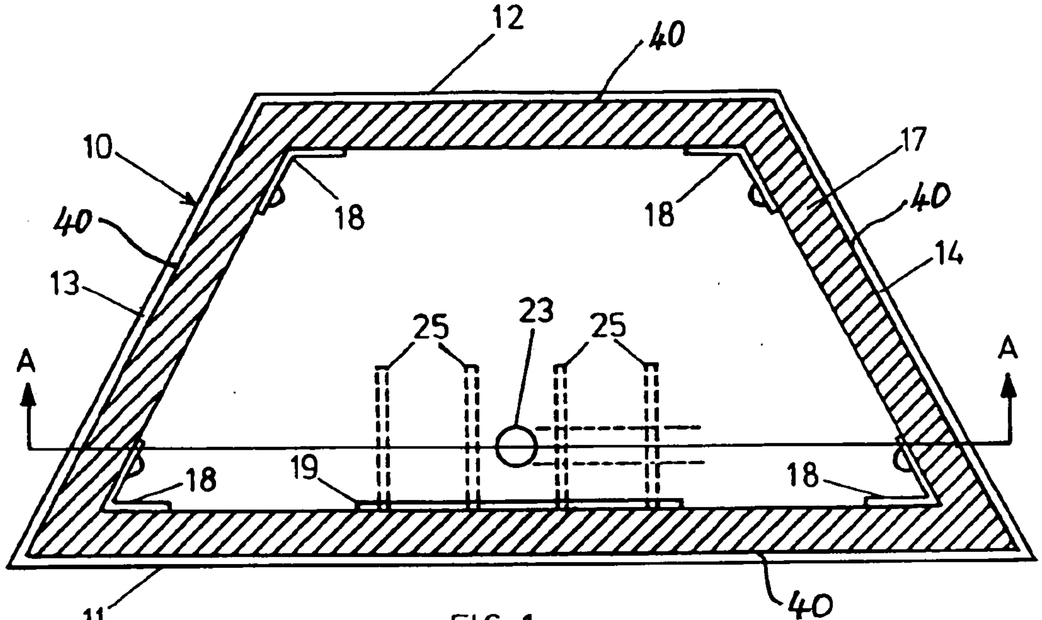
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FIG 1

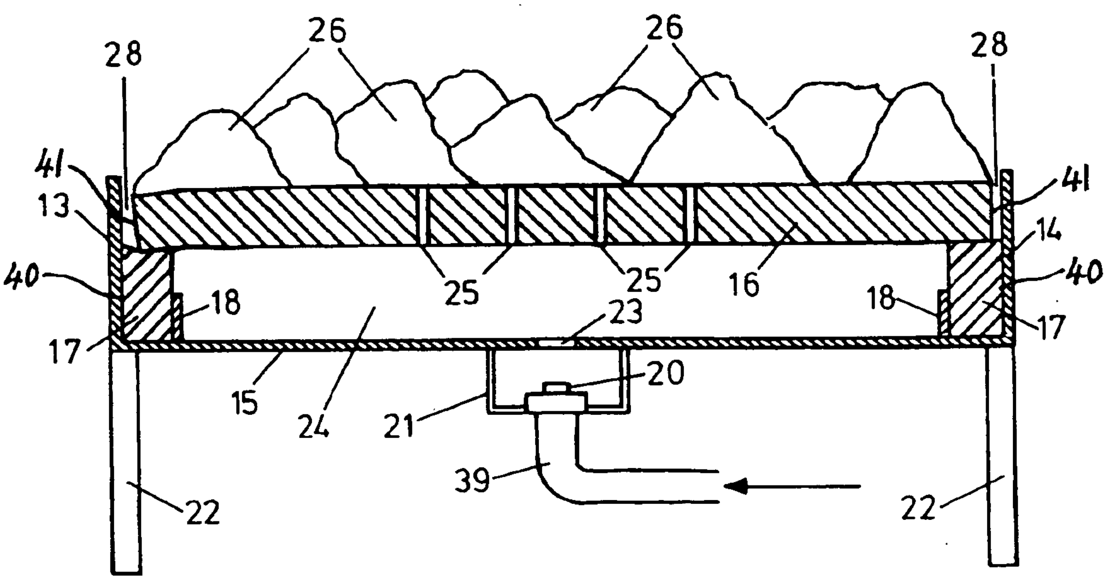
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FIG 2